# REDUCING FOREIGN OBJECT DAMAGE THROUGH IMPROVED HUMAN PERFORMANCE: BEST PRACTICES

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*07 March 2001*

## EXECUTIVE SUMMARY

This document reports the first of a two-phase study to apply human factors 'best practices' to current aviation industry Foreign Object Damage (FOD) prevention programs. This document reports the current status of industry programs to track and mitigate the FOD challenge. The research team investigated current industry practices related to FOD by querying a representative sample of industry partners. The team identified 'Best Practices' used in hangars, on the line, or any place where FOD prevention is critical. The report shows that there are many opportunities to improve FOD programs throughout the industry.

## 1.0 BACKGROUND AND REQUIREMENT FOR THE STUDY

In 1998, the Air Transport Association's Maintenance Human Factors Subcommittee, which includes members of the FAA and various industry participants, put together a task force of airline and industry representatives to develop input for guiding the Federal Aviation Administration's funding for maintenance human factors research. A questionnaire was formulated and given to senior Quality Assurance personnel, at approximately ten organizations. They were asked to rate frequency and severity of errors according to the Boeing MEDA taxonomy and as they related to aviation safety. The frequency and severity scores were combined to rank the top errors. The results of the survey showed 'debris on the ramp', and 'material left in the aircraft/engine' as the highest level of severity based on the outcome of the error on aircraft safety. These results demonstrated a requirement for focus on FOD as it applies to human factors. Though some research has been performed that examines human factors precursors to ground damage,14 relatively little effort has been dedicated to organization-level precursors with respect to human factors aspects of FOD.

In a partnership with the industry, the FAA has also implemented a program titled *Safer Skies*, where the focal point is on root causes of accidents and determination of best-course actions to prevent them. This initiative aims to achieve a 5-fold reduction in fatal aviation accidents within 10 years. A major part of this program, titled 'Human Factors in Operations and Maintenance', focuses on human factors issues associated with accidents and intervention through rulemaking, research, and policy. The Office of Aviation Medicine sponsors this research.

FOD to an aircraft is not a rare occurrence. Rather, it is an ongoing problem that has a significant economic impact on the aviation industry. Henderson8 found that FOD costs Air Transport Association (ATA) members an average of $88 million per year. This dollar figure does not include any ancillary costs of FOD such as aircraft delays and lost revenue. Boeing estimates that the

industry-wide costs for FOD exceeds $4 billion per year1. FOD costs human lives as well as equipment. One recent account illustrates the importance of this statement:

> On July 25, 2000, Concorde Jet F-BTSC, owned and operated by Air France, crashed during takeoff from the Charles De Gaulle Airport. The subsequent technical investigation of the accident conducted by the Bureau Enquêtes-Accidents (BEA), with the participation of representatives of the Air Accidents Investigation Branch (AAIB), has so far established that during the take-off run, the front right tire of the left main landing gear was destroyed most likely because it ran over a piece of metal.7 The destruction of the tire caused damage, either directly or indirectly, to the aircraft structure and systems. This damage caused the aircraft to crash less than one minute and thirty seconds after the destruction of the tire. One hundred nine people in the aircraft and four people on the ground were killed as a result of foreign object damage (FOD) to a highly sophisticated aircraft.

There are many FOD prevention programs throughout the aviation industry. This study will examine a set of these programs from a human factors perspective in order to create a generalized set of industry "best practices". Since the focus of this study is on the human factors aspect of FOD prevention, it will purposely ignore such things as wildlife, manufacturing, and design unless these factors equate back to some controllable human factor.

# 2.0 RESEARCH METHODOLOGY

The aviation Industry and the National Transportation Safety Board (NTSB) have requested that the FAA Aviation Maintenance and Inspection Human Factors Research Program provide practical human factors guidance related to foreign object damage (FOD). The research team examined a broad range of categorized aviation maintenance practices (applicable to FOD), provided by industry participants. These practices were not defined for the purposes of this exploratory study, merely used as a reference. Related costs were also examined, since they are of critical importance to the airlines.

## 2.1 Data Collection Techniques

This exploratory study sought information concerning FOD prevention programs from industry leaders, several branches of the military, and the National Aerospace FOD Prevention Inc. (NAFPI). In addition, researchers for this project attended the attended the 21st National Aerospace Foreign Object Damage/Debris Prevention Conference as a means to identify key industry personnel, and establish contacts for future information. The Acknowledgements section of this document lists companies that contributed materials to this project. The annual conference featured numerous presentations and workshops highlighting the importance of FOD prevention in the workplaces along with thirty-four exhibitors displaying the latest technological advancements in tools, equipment and solutions for preventing FOD.

Another effort to mitigate the FOD problem is one being undertaken by the Air Transport Association. This effort includes building an on-line database system to track FOD incidents. This system would allow a user to query accidents/incidents by aircraft type, location or various other variables that would allow for trend analysis to be done on FOD incidents.

## 2.2 Industry Participants

Aviation industry leaders possess FOD prevention programs and are currently utilizing these

systems. Industry leaders are defined as those industry companies, which have a significant impact on the aviation and aerospace industry. Some industry participants that provided material for this report include: Lockheed Martin, Boeing, United, US Airways, San Francisco Airport, Vancouver International Airport Authority, US Military Services, Royal Air Force (RAF), and National Aerospace and FOD Prevention Inc.

The largest contributor of information used in this study was the National Aerospace FOD Prevention, Inc. (NAFPI). NAFPI is a non-profit, educational organization established to standardize terms and methods for the prevention of foreign object damage to aircraft and aerospace vehicles. Its objective is to make the aerospace industry aware of the need to eliminate foreign object debris, and provide information about current proven practices and technological advancements that prevent FOD. Board members constitute a sample of industry leaders intent on the elimination of FOD and the promotion of FOD education throughout the industry. Currently represented companies include: Northrop Grumman, Boeing, United Space Alliance, Lockheed Martin, Bell Helicopter Textron, and the United States Air Force. Additionally, board members work with all interested companies, associations, and government agencies to help prevent FOD. NAFPI co-hosts the annual FOD conference for the aviation community to meet and share lessons learned, ideas, etc., toward the common goal of ground and flight safety.

The Airline Transport Association has also undertaken a comprehensive FOD project that includes construction of a web-based database available to all ATA members to initiate FOD events reports by city, location, aircraft type and other variables. Also included in this ATA project is a planned Human Factors guide to FOD currently being completed by a designee with Delta Airlines.

## 3.0 INDUSTRY DEFINITIONS AND CLASSIFICATIONS

Industry definitions are important to the foundation of this project. The aviation industry; however, does not have a standardized definition of what constitutes foreign object debris, damage, or potential FOD. Numerous descriptions were examined to find a consistent definition.

The FAA defines a Foreign Object (FO), which is a precursor to foreign object damage, as “a substance or article alien to a vehicle or system”.13 Boeing6 has focused this definition towards aircraft by defining FO as “a substance or article alien to the aircraft or assembly that has been allowed to invade the product.” Boeing, Military Aircraft and Missiles, Puget Sound4 adds that on the flight line a foreign object is also “any object on the ground that might come aboard the assembly or be ingested by the engines”. Vancouver International Airport Authority10 has a broader definition of foreign object debris that includes “any substance, part, component, natural element or live animal that, because of its proximity to the area of the aircraft in motion, has the potential to accidentally encounter an aircraft and threaten its safe operation and/or require repair”.

With respect to foreign object damage, Aerospace Industries Association, Inc.2 defines FOD as “any damage attributed to a foreign object that can be expressed in physical or economical (monetary) terms which may or may not degrade the product’s required safety and/or performance characteristics”. Northrop Grumman11 categorizes foreign object damage into: 1) DOD (Domestic Object Damage) that results from the ingestion of components or hardware normally associated with the aircraft, 2) Internal FOD or damage incurred from components of the engine itself, and 3) External FOD which is damage that occurs because of some operational procedure such as icing or bird strike encounters.

This review of the definitions of FO and FOD, illustrates that there are differences not only between companies, but also within companies. Therefore, for the purposes of this study, Foreign Object (FO) Debris is defined as:

> Any alien substance or article that invades any component of an aircraft which causes or has potential to cause damage to aircraft, persons, or otherwise diminish safety.

Also, Foreign Object Damage (FOD) is defined as:

> Any damage that has occurred to aircraft, vehicle, or persons, which can be attributed to an alien substance or article that has invaded any component of, on, or in an aircraft.

It is noted that many companies are currently undergoing standardization of their FOD preventative practices, including standardized FOD definitions.

## 4.0 HUMAN FACTORS AND FOD

Based on the previous definition, one can conclude that much foreign object damage stems from human error. Thus, we can apply human factors concepts to the identification and remediation of these errors. The following sections briefly address the identification and definitions of human error as they relate to FOD, and the management of error towards the reduction and elimination of FOD.

### 4.1 Identification and Definitions of Human Error

The International Civil Aviation Organization (ICAO)9 defines human error as "the failure of planned actions to achieve their desired goal." If we assume that the error was unintentional, then the failure can be a product of two actions.12

- Execution Failure - Execution failures are errors that may be a result of actions that do not go as planned. These are sometimes referred to as slips or lapses. An example of execution failure would be the unintentional introduction of a FO to an aircraft during a maintenance activity.

- Mistakes - If the action goes as planned but the plan is not adequate to achieve an intended result, then the failure is considered a mistake. Mistakes are higher-level failures and should be addressed from an organizational standpoint.

Failures can be further divided into active or latent failures. The difference between these two types of failures concerns the length of time that passes between the occurrence of the error and the adverse impact of the event on the system. Active and latent failures are defined as follows:

- Active Failures - are the results of unsafe acts committed by individuals at the human-system interface, and whose actions can, and sometime do, have immediate adverse consequences.

- Latent Failure - are errors that may lie dormant for a long period of time, only becoming evident when they combine with a triggering factor (e.g. error, violation, etc.) to overcome the system's defenses. Latent failures can be attributed to local factors, which are present in the immediate workplace, and organizational factors that lie "upstream" from the workplace.

As previously noted, errors are, by definition, unintentional. There are; however, another set of actions and events that are classified as violations. Violations are intentional deviations from safe operating procedures, recommended practices, and rules. Though there are some unintentional violations, most are committed deliberately. An example of a violation that could result in FOD is dropping some screws on the ground and failing to pick them up, or ignoring protocol in order to expedite the maintenance process.

### 4.2 Human Error Management

Human error management, as it applies to FOD, covers a wide variety of measures that can be classified as:

- FOD reduction or elimination - which include efforts to limit the occurrence of FOD through pro-active support.

- FOD containment, which includes measures that limit the adverse consequences of error that still occur.

Airports, airlines, Fixed Base Operators, etc. have developed FOD prevention programs to address both the identification of potential FOD activities and the management of those activities in order to reduce or eliminate FOD. The following sections are described or describe the various components of these FOD prevention programs.

## 5.0 ASSESSMENT OF CURRENT INDUSTRY FOD PROGRAMS

The primary objective of FOD preventative programs is to reduce or eliminate the causes and effects of FOD, to stress good work habits through defined work disciplines, and to promote active involvement in FOD elimination through specific techniques. FOD prevention programs are associated with design, development, manufacturing, assembly, testing, operations, refurbishment, modifications and maintenance of aircraft on a continual basis. Every company within the industry concedes that FOD programs are necessary though the method in which those companies implement FOD preventative practices varies significantly. Many companies throughout the industry are currently undertaking the task of internal standardization of the FOD programs.

### 5.1 Industry FOD Prevention Program Practices

The research team reviewed a number of FOD prevention programs supplied by aviation industry leaders. The program elements were combined to provide a list of available 'best practices' of FOD management methods. Table 1 is a summary of FOD management strategies and methods with the associated components. The first four management methods are examined in further detail in the following sections.

**Table 1 - FOD Management Strategies and Methods**

| | FOD Management Methods | Components |
|---|---|---|
| **1.** | Preventative Practices | • **FOD walks**<br>• Runway sweepers<br>• Prevention guidelines<br>• Tool Control |
| 2. | Training Courses<br>• Classroom<br>• Computer-based Training (CBT) | • Program and procedures/policies<br>• Definitions and causes<br>• Safe workmanship practices: Visibility Charts, Trend analysis, report cards, |

| | | |
|---|---|---|
| | • On-The-Job Training (OJT) | performance reviews, customer comments, reviews<br>• Cleaning and Inspection of parts<br>• Individual responsibilities<br>• Hand-on training from supervisors on preventative practices<br>• Learning Resource Centers<br>• Demonstrating FOD incidents<br>• Types of FOD<br>• FOD Labs- Visually presents FOD damage, mishap videos and training. (refer to CBT, Course Dev., Learning Resource centers) |
| 3. | FOD Committees, Specified Personnel | • Define FOD terms, identify major contributors, identify HOW, list key reference documents for FOD, explain how inspections are conducted<br>• Building and maintaining FOD training/awareness programs |
| 4. | Housekeeping Guidelines/Rules | • Proper storage, shipment, and handling of components<br>• Accountability of control of tools and hardware<br>• “Clean as you go” |
| 5. | Consulting | • Review and assessment of FOD procedures<br>• Necessary revisions recommended<br>• Ensure contractors are complying with set regulations and standards |
| 6. | FOD Awareness Job Aids | • Visual job aids, management aids, tool shadowboxes, stickers, high visibility posters<br>• Awards Programs |

## 5.2 Common FOD Management Strategies and Methods

### *5.2.1 Preventative Practices*

Prevention practices can include such simple procedures as removing watches, rings, chains or jewelry, and wearing tighter clothing that could not be drawn into engine intakes. The military outlines a rule for wearing only button-less and pocket-less coveralls when physical entry is needed to inspect engine or exhaust areas. FOD walks, or sweeps, can also be made at establishment where

FOD is a potential problem. These walks, usually administered by maintenance technicians, take place as much as twice a day, to as little as four times a year, depending on the company policy. In addition to the walks, airports and air carriers use hand brooms, runway sweepers, and vacuums to ensure expedient and accurate FOD searches. As a direct result of these programs many tenants have invoked more stringent housekeeping measures, thus reducing the chance of a FOD related incident.

Early design consideration for FOD prevention constitutes the initial phases of building an effective FOD prevention program. FOD design considerations include, but are not limited to:

- Identification and elimination of foreign object entrapment areas
- Identification and close up areas through which foreign objects can migrate (also part of training process)
- Using screens or coverings to protect inlets and openings where debris could inhibit operations
- Installation of special panels to prevent FOD
- Consideration of chaffing or rubbing-potential areas
- Usage of compatible metals and/or seals to prevent accelerated deterioration (primarily manufacturing)
- Usage of clamps, fasteners, or other specially designed tools such as blind fasteners, to reduce debis in critical areas (they are not prone to leaving debris during installation)2,5

These, and other more descript design considerations, are used in the design of FOD prevention throughout the aviation-manufacturing environment.

### *5.2.2 Training*

The purpose and primary objective of any FOD prevention-training program is to increase employee awareness as to the causes and effects of FOD, emphasize and train good work habits through structured work disciplines, and promote active involvement through awareness programs. FOD prevention training programs are associated with design, development, manufacturing, assembly, testing, repair, refurbishment, modifications, maintenance and general operations. In most companies FOD prevention programs are addressed through initial training and recurrent training.

FOD subjects also covered during training include:2,3,5

- Proper storage, shipping and handling of material, components, equipment, personal items, and tools
- Continual vigilance for potential sources of FOD and techniques to control debris
- Ramp control and flight line taxiway FOD clean-up strategies
- Housekeeping (cleanliness in work area)
- Cleaning and inspection of components and assemblies

- Accountability and control of tools and hardware
- Control of personal items, equipment and consumables
- Care and protection of end items (Quality Workmanship, “Clean-As-You-Go”, inspection, and pride in workmanship)
- How to report FOD incidents or potential incidents

Also included in many training programs is FOD awareness training. According to Northrop Grumman,11 all new employees are required to receive FOD indoctrination during company orientation. Under no circumstances are supervisors or crewmembers allowed to work on an aircraft or its sub-assemblies without FOD training. Also outlined are restrictions governing those employees with “hands-on” contact with aircraft or other FOD critical components. Those individuals are to receive annual FOD and Tool Control refresher courses provided by a designated coordinator for FOD prevention.

Most companies also stipulate that contractors, new hires, and rehired employees receive training before handling potentially harmful materials. There are also training sections pertaining to transient personnel and contractors and their adherence requirements to specific FOD guidelines. Air Force Material Command stipulates that annual FOD training will take place, supplemented with quarterly briefings, to all maintenance, operation, and base personnel working in or around potential FOD areas or aircraft. A limited number of days are given for new employees to receive training since they are not allowed to work with any vehicle until training is complete.

Though these training rules are set into place in almost every company represented in this study, training specifics (e.g., how, why, when and where) were, for the most part, not addressed. It was found during the research that most if not all employees were aware that there was a FOD program in place, but specifics regarding where to find documentation, when they would receive training, and who facilitated the training was not known.

### *5.2.3 FOD Committees and Specialized Personnel*

FOD prevention committees exist within most companies. The committees conduct weekly, monthly, or quarterly meetings where goals, objectives and realistic expectations are discussed. Prevention committees are usually made up of safety and quality assurance personnel, maintenance training managers, an appointed FOD Manager or Supervisor, security, and a team that represents the customer or user. These committees discuss recent FOD incidents and accidents, assign specific actions and responsibilities, and determine whether or not specific FOD occurrences could have been prevented with the company’s current initiatives. Management uses these meetings to assure implementation and corrective actions throughout the organization. FOD committees are also involved with FOD awareness programs and award programs designed to help reduce FOD.

#### **5.2.3.1 Awareness**

Publicity is a key element of an effective FOD prevention program. Information on posters and other materials to establish and maintain an awareness of the need to prevent FOD can usually be obtained from designated FOD personnel. NGSA standards require that a FOD compliance sticker be placed on all personal toolboxes taken into the work area (NGSA Form 619).

#### 5.2.3.2 Awards programs

Incentive programs also constitute a major part of the individual's vigilance in FOD prevention. Programs have been designed and implemented to reward personnel for their FOD reduction efforts. Competitive programs between organizations, shops, areas and the like are encouraged in many companies. These programs constitute the grassroots effort, which involves all airport, manufacturing, and hangar employees.

### *5.2.4 Housekeeping Guidelines*

"Clean-as-you-go" is almost certainly the most common phrase heard with regard to FOD prevention and reduction. The importance of good housekeeping habits is recognized in maintenance areas where the demand of technicians' technical tasks requires them to handle many tools and parts in a brief, and often rushed, deadline. According to NGSA62.01M-711, Flight and Ground Operations, "clean-as-you-go" refers to a standard of job-by-job clean up. It implies that:

- Cleaning at the completion of each definable task and job before beginning another
- Cleaning before you leave the work area for more than a short break, and at end-of-shift
- Being in control of debris, tools, hardware and consumables while you work
- Avoiding migration of chips, filings, fasteners, or other parts in unwanted areas

In many cases, housekeeping guidelines or cleaning procedures are standard for any FOD program. These practices are enforced per established FOD guidelines. Universally, verification of proper inspection and cleaning of the aircraft and surrounding areas throughout the maintenance areas is outlined and enforced. This includes sweeping, cleaning rags, picking up of unused materials, and dispensing of packaging. These housekeeping guidelines throughout the industry vary and are too numerous to list, though some notable procedures are the five "S's":15

- Sorting - Separating the necessary from the unnecessary. (Unnecessary items are to be removed from the workplace)
- Sweeping - Enforces "Clean as you go"; Keeps everything neat and clean
- Standardizing - Identifies the best processes to maintain work areas and assures consistency
- Simplifying - Provides specific, easy to understand directions, methods and procedures
- Self-Discipline - Expects each individual to assume ownership of housekeeping in their work area

#### 5.2.4.1 Tool Control

A large part of an effective FOD program are the procedures and practices of tool control. The fundamental responsibility of tool control lies with the individual who brings these items into a controlled area. There are numerous methods to facilitate accountability: use of shadowboxes, shadow boards, bar coding, special canvas layouts with tool pockets, tool counters, chits, tool bags, and consolidated tool kits.2 One example of this methodology is Boeing's PEN system, which uses the worker's employee number to permanently mark each tool. FOD prevention teams, or committees, retain responsibilities including establishing tool accountability systems.

Personal accountability accounts for a large portion of many companies, tool management practices. Some companies, such as Boeing, Lockheed, and Northrop Grumman, have policies stating that any tools not checked through the company will not be allowed in controlled areas.

Other tool control procedures include:

- At the start of the shift the individual will list all tools to be used

- Individuals are required to initiate a new card each time a different plane is worked on throughout the shift

- When job is complete, card(s) will be checked to account for all tools. A manager will sign these cards[5]

Tool card requirements, coupled with random audits of tool accountability, tool card accurateness, and completeness, ensure that maintenance tools are organized and controlled at all times. In addition, random employees are assigned to check company owned tool kits (where each tool is shadowed for placement), to ensure if a tool is missing, or if a chit or ID card has taken its place.

In the event of a missing or unaccounted for item, the supervisor will stop all maintenance tasks in the affected area of the aircraft or assembly involved. Notification of FOD manager or safety operation personnel is outlined in all manufacturing, and present in most other companies.

#### 5.2.4.2 Materials Handling

A well developed plan for material handling and parts protection can eliminate many potential FOD hazards. Each FOD program defines specific control techniques regarding materials handling. Examples of these techniques include:

- Material transported, packaged, or stored shall be handled in accordance with material handling standards as prescribed in specific material handling manuals

- Machine tools, attachments, and tooling fixtures shall be kept free of debris, assembly aids, etc., and when not in use, properly stored on shelves or in cabinets, as appropriate

- Machine tools, parts, and tooling shall not be placed on major assemblies during manufacturing unless the surfaces are protected by a blanket or mat[11]

## 6.0 REPORTING

Because FOD accidents are relatively frequent, a reporting system is necessary to accurately categorize FOD accidents. Reporting systems not only help a company to learn from the incidents but also assist in ongoing investigation and analyses. Prevention is imperative to every aviation and aerospace company. Therefore, constant and accurate collection of FOD incidents and accidents is required to accurately predict or prevent future FOD related problems. FOD incident and accident reporting procedures include forms to track those items. Examples of lost or tool reporting forms are provided in Appendix A. Types of reports generated to prevent and track FOD incidents include:

- Missing item reports[4,5,6,11]

- Tool Control records
- Personal tool box inventory reports
- Tool tote inventory reports
- Company owned tool sign-out log
- Supervisor's monthly tool audit report

In most companies, management keeps stringent records of measures on the airlines performance such as: on-time flight departures and arrivals, turn-around time for aircraft requiring maintenance, injuries to personnel, and of course, damage to aircraft and other ground equipment. However, "near mishap" situations, where FOD incidents would have occurred had the event remained undetected go undocumented in most cases. Sharing information on 'near mishaps' with workers and other personnel is an important part of feedback, awareness, and lessons learned.

There are vast differences in reporting structures within and among companies. Thus, it is difficult to easily list contributory factors. It is noted that many industry leaders are in the process of standardizing reporting systems company wide at this time.

## 7.0 CONCLUSION/ RECOMMENDATIONS/FUTURE RESEARCH

There is no simple way of ensuring that FOD incidents and accidents do not occur. However, an important step towards industry wide and maintenance crew awareness is the recognition that maintenance quality errors, omission, and lapses may be indicators of wider organizational problems.

During Phase 1, this research has accomplished the following steps:

- Established industry partners
- Defined FOD and differentiated it from other forms of ground damage, according to industry participants
- Applied current industry categorizations of human errors to FOD related incidents
- Identified a preliminary listing of best practices for prevention of FOD

This research reinforced the fact that though FOD is widely recognized as a safety and economic issue in the aviation industry, a standardized FOD prevention program does not exist. Each company, and in many cases divisions within a company, approaches the problem of FOD prevention in its own unique way. In addition, the lack of standardized benchmarking and reporting procedures prevent a clear picture of the effects of implementing a FOD prevention program.

Another aspect reinforced during this research is that many FOD incidents go unreported. The cause of this may be as simple as an aversion to the additional paperwork required to report the incident to possibly a fear of reprisal if the incident is reported.

The second phase of this research must examine and recommend improved methods to collect and share FOD-related data; improved methods to establish the root cause of FOD; methods to demonstrate return-on-investment in FOD prevention programs; straightforward FOD prevention literature designed for maintenance personnel; and an FAA Advisory Circular on Human Factors and FOD Prevention.

## 8.0 ACKNOWLEDGEMENTS

Industry participants that provided material for this report include, but are not limited to: Lockheed Martin (including many plants), Boeing, United, US Airways, San Francisco Airport, Vancouver International Airport Authority, United States Air Force, The Naval Safety Center, Royal Air Force (RAF). Special thanks to Andrew Kenney, Secretary/Public Affairs Director of the National Aerospace and FOD Prevention Inc. Also, a special thanks to those who provided information on current industry FOD initiatives including Charlie Boutz, of the Airline Transport Association.

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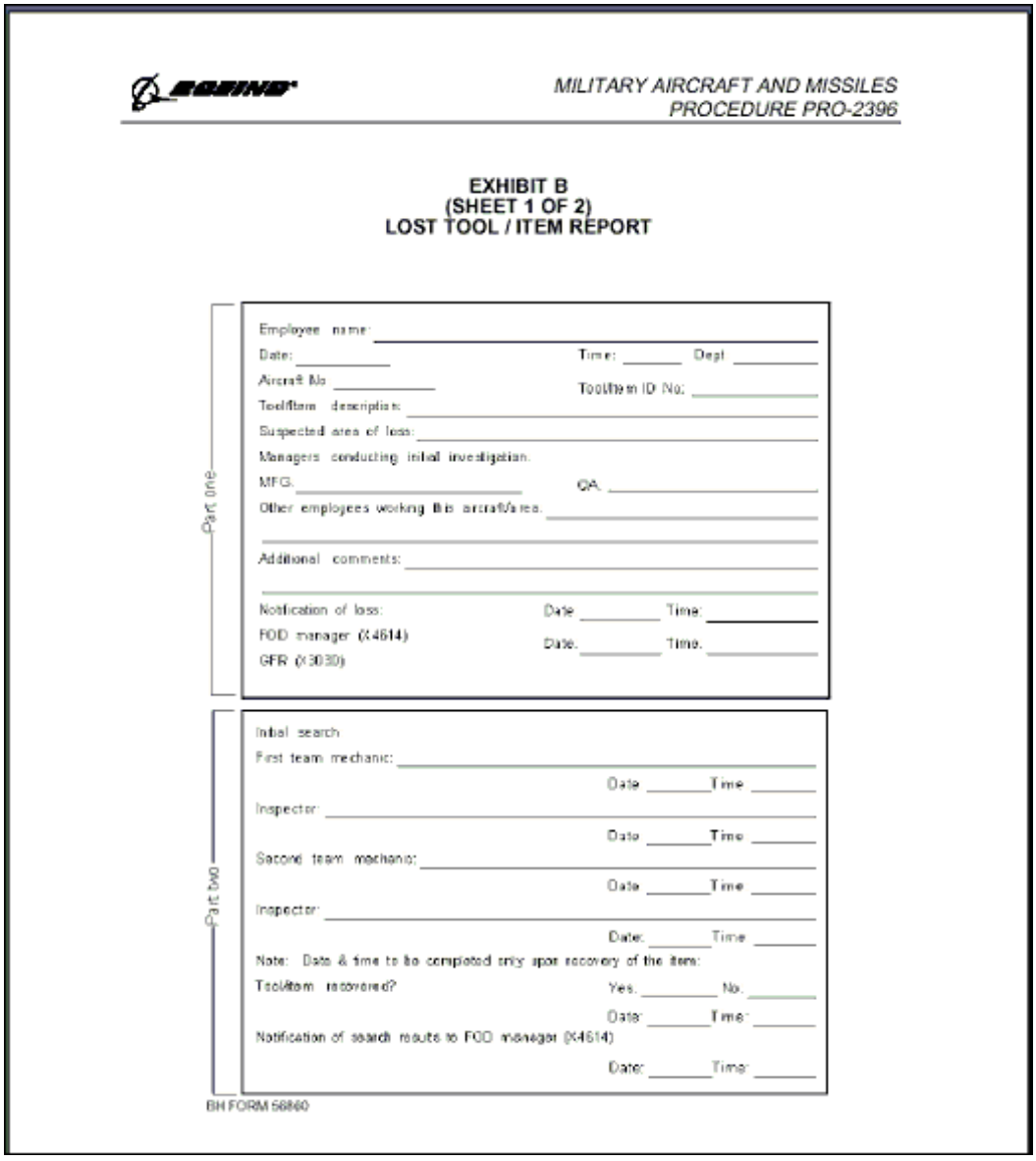
# 11.0 APPENDIX 1



MILITARY AIRCRAFT AND MISSILES
PROCEDURE PRO-2396

**EXHIBIT B**
**(SHEET 1 OF 2)**
**LOST TOOL / ITEM REPORT**

Part one

Employee name: _____

Date: _____ Time: _____ Dept _____

Aircraft No _____ Tool/Item ID No: _____

Tool/Item description: _____

Suspected area of loss: _____

Managers conducting initial investigation:

MFG: _____ QA: _____

Other employees working this aircraft/area: _____

_____

Additional comments: _____

_____

Notification of loss: Date _____ Time: _____

FOD manager (X4614) Date: _____ Time: _____

GFR (X3030)

Part two

Initial search

First team mechanic: _____

Date _____ Time _____

Inspector: _____

Date _____ Time _____

Second team mechanic: _____

Date _____ Time _____

Inspector: _____

Date: _____ Time _____

Note: Date & time to be completed only upon recovery of the item:

Tool/Item recovered? Yes. _____ No. _____

Date: _____ Time: _____

Notification of search results to FOD manager (X4614)

Date: _____ Time: _____

BH FORM 56860